

The setup, service, and
functions of the
DeeControl slicing
software

DeeControl

User Manual



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2. Introduction

DeeControl software is used for the preparation of print jobs for be3D printers. Its primary function is transforming files containing 3D models created by third-party software into GCode files that are used as data sources for 3D printers. The instructions contained in the GCode file are then processed by the printer in order to produce a 3D model.

DeeControl consists of two parts – *User Interface* and *Slicer Engine*. DeeControl may include more than one *Slicer Engine*.

The *User Interface* allows the user to work with 3D objects and to define printing parameters. Manipulation of the 3D object is restricted to rotation, moving and zooming (in and out). DeeControl does not allow users to create new 3D objects or adjust the shape of existing ones. After the user has finished preparing the model, the defined parameters are sent to the *Slicer Engine*.

The *Slicer Engine* calculates the optimized route of the printer mechanism in order to decrease printing speed and material consumption as much as possible (as far as user-defined parameters allow). The final output of the entire process is a set of instructions stored in a GCode file.

3. Minimum requirements

Software:

Operating system:

Windows 7, Windows 8, Windows 8.1, OS X 10.7 and later
DirectX 10 or higher (OpenGL)

Hardware:

Intel Core i3 processor or a processor with similar performance
2 GB RAM
2 GB hard disk space

4. Installation

To download the latest version of DeeControl, please visit www.be3d.cz/downloads. The website also includes a list of previous versions.

- The installation directory can be changed during setup.
- The user may enable supported file type association during setup. If enabled, the given file type will always be opened with DeeControl.

Supported file types:

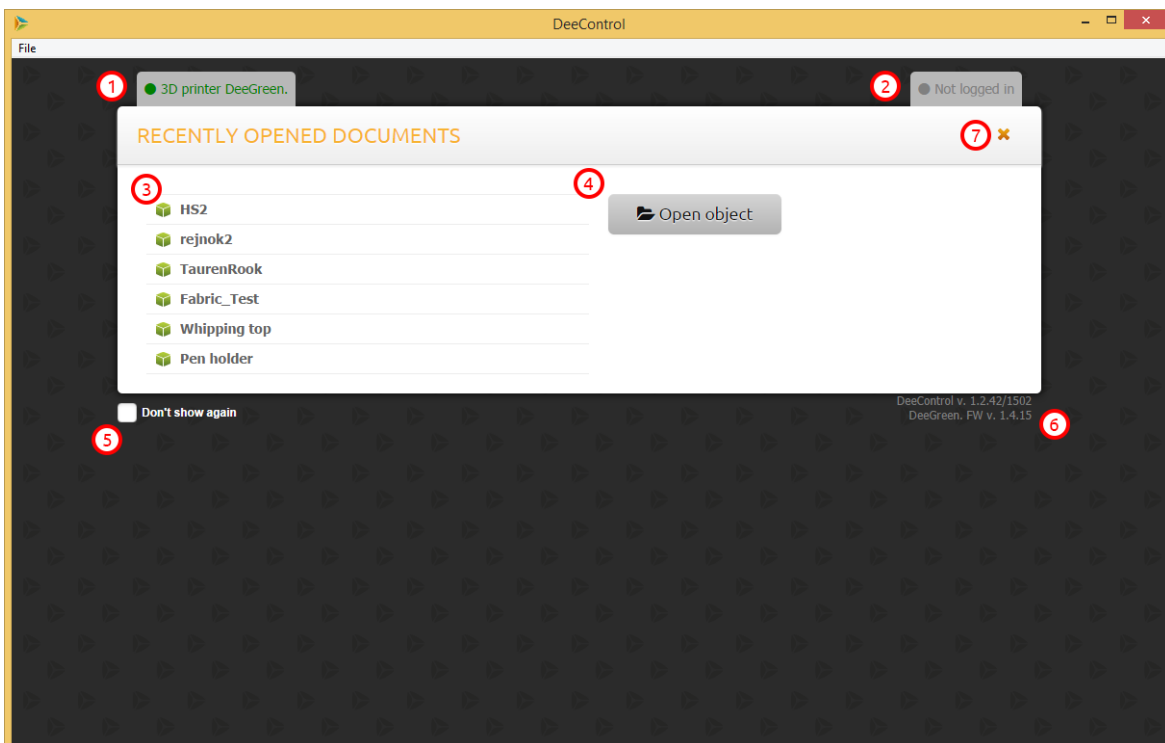
.STL
.OBJ
.3DS

- The user can disable the creation of a desktop shortcut during setup.

5. Launching the application

Launch DeeControl by clicking the desktop icon or the application icon in the list of installed programs.

6. Splash screen

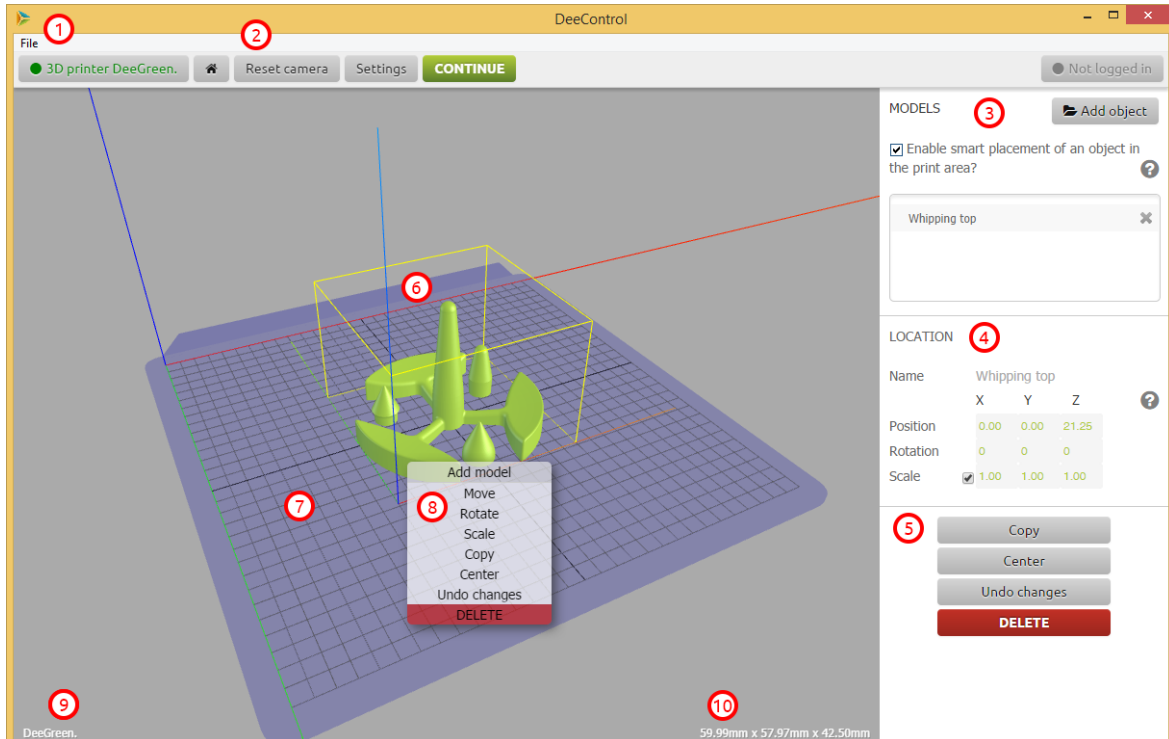


The Splash Screen allows the user to quickly locate models they have recently worked with, and to find out about updates.

1. **Printer connection indicator** – if the printer is connected to the computer while DeeControl is running, the name of the printer will be displayed here.
2. **User name** – displays the name of the logged-on user.
3. **Recently opened models** – displays recently opened files. Click to load the files onto the main screen.
4. **Open File button** – click to open a dialog box with folders that can be used to search for models stored on your hard drive.

5. **Don't show again** – check this box if you want the program to open with the main screen.
6. **Updates** – if your computer is connected to the Internet, this part of the screen will display the available DeeControl updates. If the printer is connected to a computer, the firmware can be updated as well.

7. Main screen

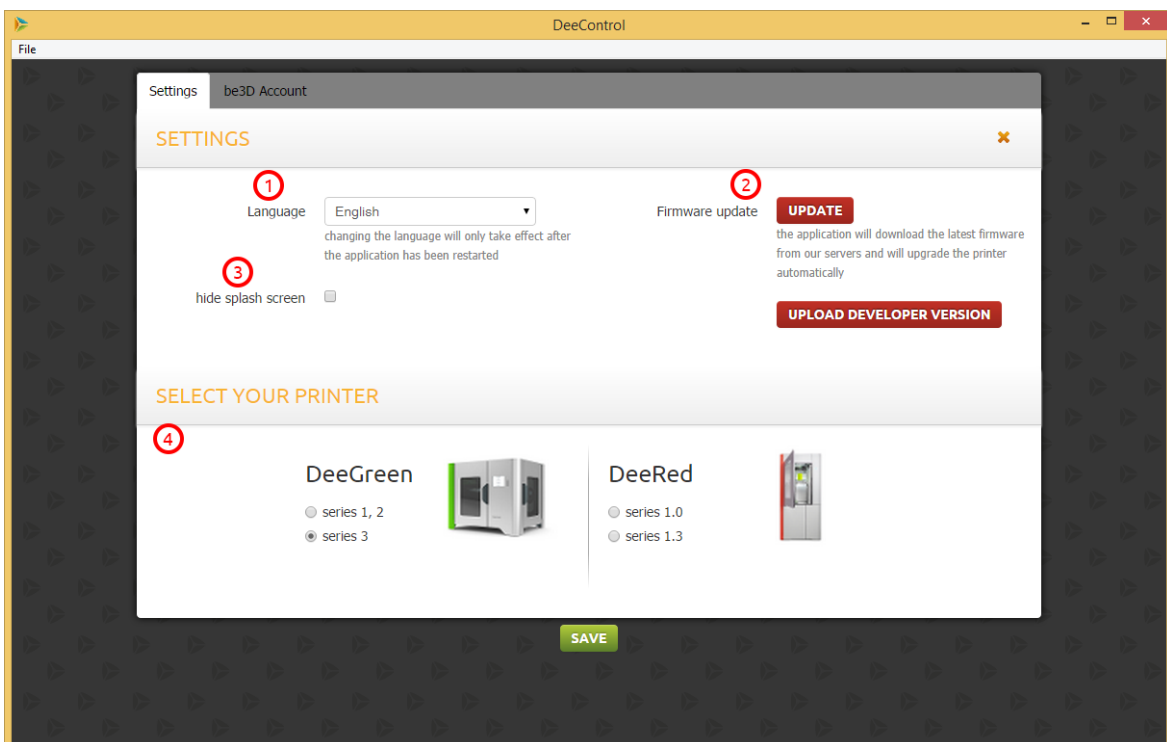


Use the main screen to prepare models for a print job. At this point in the preparation process, the user's primary aim is to design layout of the models on the print bed.

1. **File** – used to store and load projects containing models, their layout, and any modifications.
2. **Horizontal toolbar**
 - a. **Home button** – opens the splash screen
 - b. **Reset camera** – returns the camera to the default position
 - c. **Settings** – opens the settings screen
 - d. **Continue** – helps the user to complete the preparation process
3. **Models field** – allows to manage the models that are being prepared for print. The "smart place object in area?" checkbox ensures that models will not overlap when placed on the print bed (unless it is impossible).
4. **Location field** – allows to manipulate selected object. The object can be moved, rotated or stretched in three axes. Any manipulation will lead to the object being automatically returned to print-bed level.

5. **Vertical toolbar**
 - a. **Copy** – copies selected object.
 - b. **Center** – places selected object in the center of the print bed.
 - c. **Undo Changes** – reverts all changes made to the model's state after it was loaded.
 - d. **Delete** – deletes selected object.
6. **Selected model** – marked by a bounding box.
7. **Virtual print bed** – visualization of the print bed. If a model is moved outside its boundaries, its color will change, and the user will be unable to continue setting print parameters.
8. **Context menu** – right click on any object to open. Context menu allows you to manipulate with the selected object. Right click outside of the object opens menu to add a new object.
9. **Printer name** – the printer model for which the print job is being prepared. The printer model can be changed in the Settings menu.
10. **Maximum object size** – on axes X, Y and Z, oriented in accordance with the print bed.

8. Settings



1. **Language** – allows the user to change the language of the application. If changed, DeeControl will require a restart. Any language changes will take effect after restart.
2. **Firmware update** – if the printer is connected to a computer with access to the Internet, clicking this button will manually trigger firmware

update (the most recent version). The computer must not be disconnected neither from the Internet, or the computer during the update process.

3. **Hide splash screen** – the application will start on main screen when ticked.
4. **Choose printer** – choose the printer model that matches the printer type in use. By selecting the correct model, you ensure the optimization of DeeControl print job creation settings. If unsure, contact your dealer. It is imperative to use the correct model.

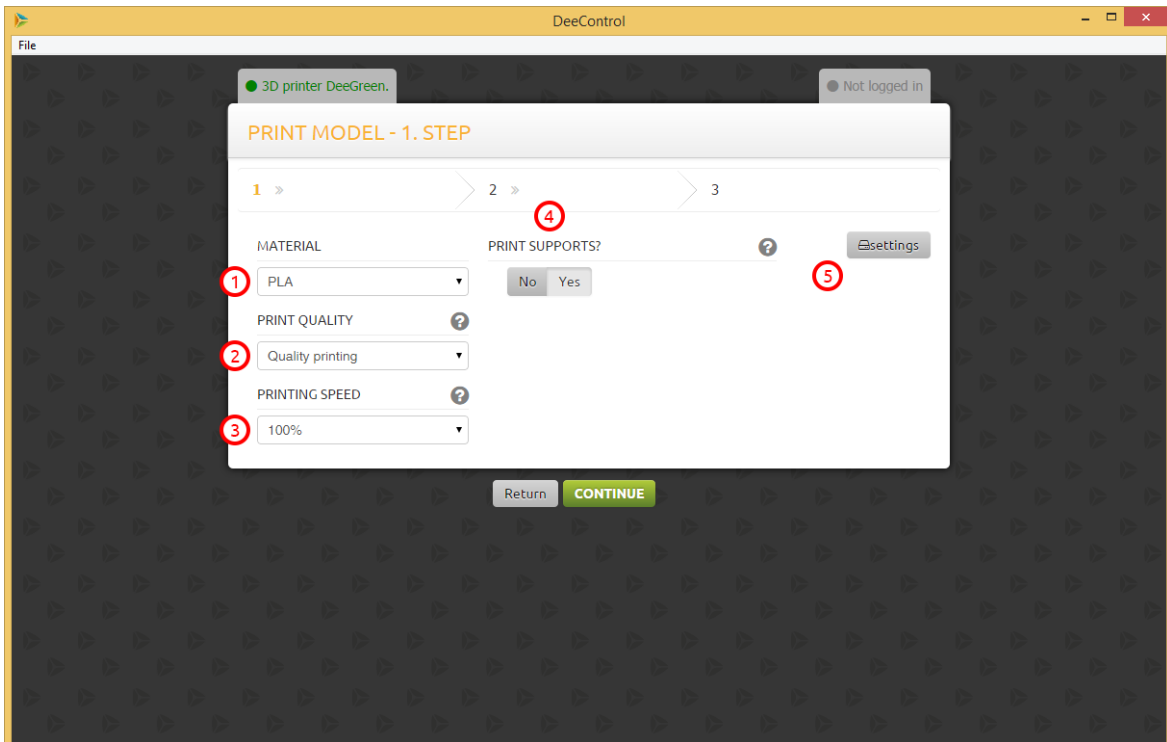
9. Your Account

The screenshot shows the DeeControl application window with the 'be3D Account' settings tab selected. The window has a yellow title bar and a dark grey background with a repeating play button pattern. The 'Settings' tab is active, and the 'be3D Account' sub-tab is selected. The 'BE3D LOGIN' section is highlighted with a red circle and the number 1. It contains fields for 'Email' and 'Your password', and a 'Log in' button. The 'BE3D REGISTRATION' section is highlighted with a red circle and the number 2. It contains fields for 'Name', 'Last name', 'Email', 'Your password', and 'Re-enter password', and a 'Register' button.

You can work in DeeControl while logged into your account.

1. **Log in** – if you already have an account, use this field to log in.
2. **Registration** – if you don't have an account yet, register here.

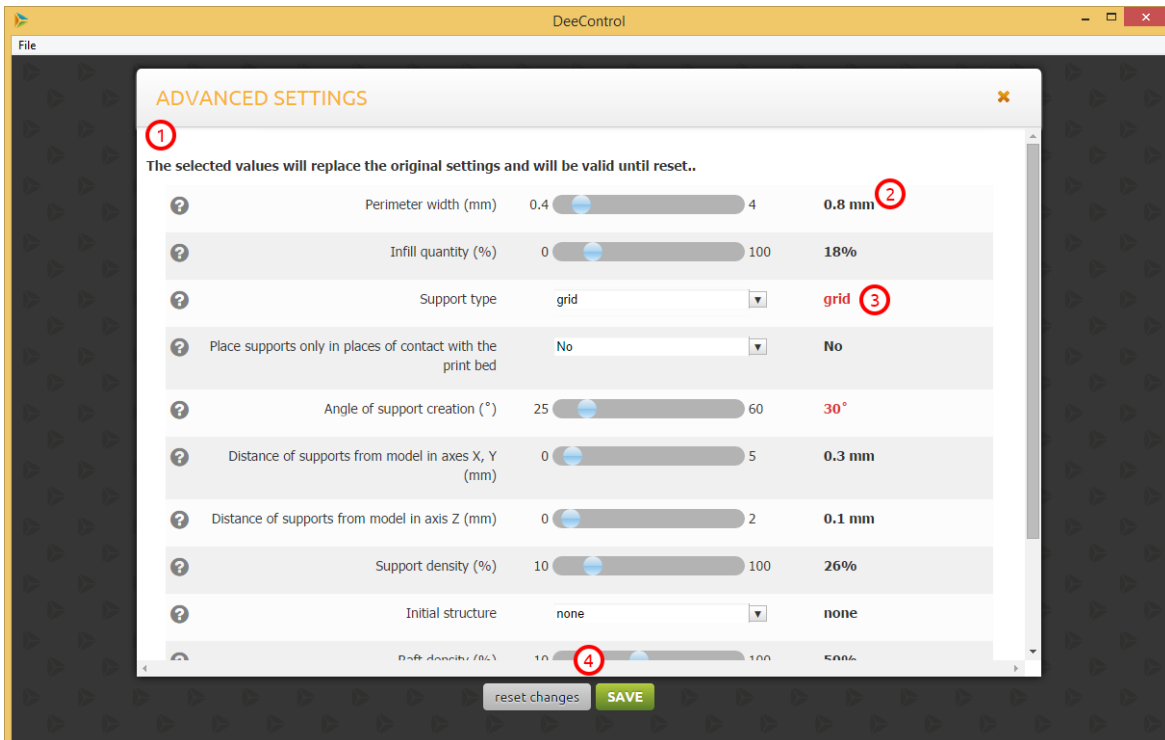
10. Print preparation (Continue)



Navigate to this screen by clicking on the green Continue button on the main screen. In this step, the print parameters that will then be sent to the printer are defined. Changing default parameters affects properties of the printed model.

1. **Material** – select the material that is physically present in your printer.
2. **Print quality** – changes layer thickness of the model. The higher the quality, the lower the layer thickness. Higher quality extends total print time.
3. **Print speed** – regulates print speed manually. For the models with small details, it is strongly recommended to reduce the speed.
4. **Print supports** – enables or disables printing supports for overhangs.
5. **Print settings** – opens advanced print settings menu. Gray buttons mark default settings. If a button is red, some parameters have been changed. Print settings are stored separately for each material as well as each type of print quality. Changing default settings may result in the model not being printed successfully.

11. Print settings



Advanced print settings are used to modify print parameters. A wide range of parameters that can be modified by sliders or through a drop-down menu are present. Modifying these parameters will affect the print result. Default values are black. If the value is red, it has been changed.

Changing the default settings may result in the model not being printed successfully.

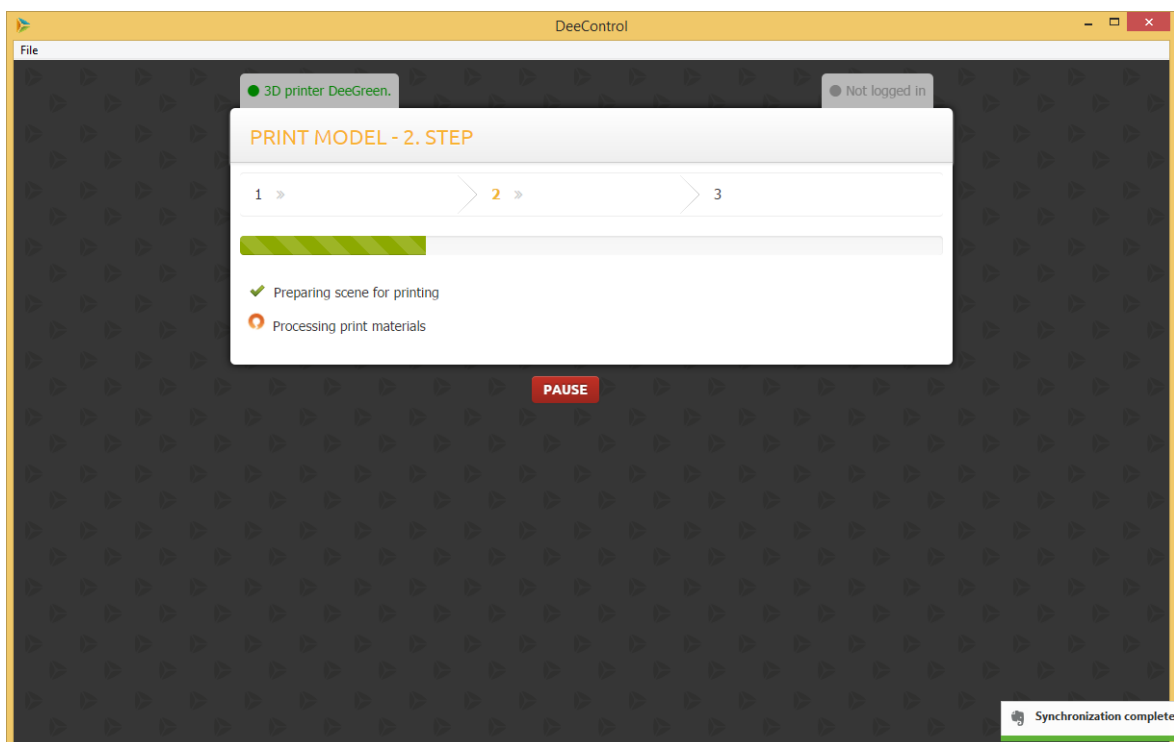
1. **Parameters list** – some parameters can be changed by moving a slider, others by selecting a value from drop-down menu.
2. **Default value** – black
3. **Custom value** – red
4. **Buttons** – return parameters to their default values, and/or to save custom values.

Parameters:

- a) **Shell thickness** – specifies the shell thickness of the model.
- b) **Infill density** – specifies the percentage of material used to fill the model's inside.
- c) **Support type** – indicates the structure of generated supports.
- d) **Support everywhere** – indicates whether supports will be generated with all overhangs, or only in areas of direct contact with the print bed.

- e) **Support angle** – indicates the maximum angle between the print bed and the area of the model, which will lead to support generation. The greater the angle, the more supports are generated.
- f) **Support density** – specifies the percentage of the material in the supports.
- g) **Initial structure** – defines a possible structure on the print bed placed around the base of the model, and reduces likelihood of the model breaking away from the print bed.
- h) **Raft density** – defines percentage of the material in the raft (a type of initial structure).
- i) **Top solid layers** – specifies the number of full layers that will close the model, or, the number of full layers that form the top of the model.
- j) **Bottom solid layers** – specifies the number of full layers that the model will start with, or, the number of full layers that form the bottom of the model.

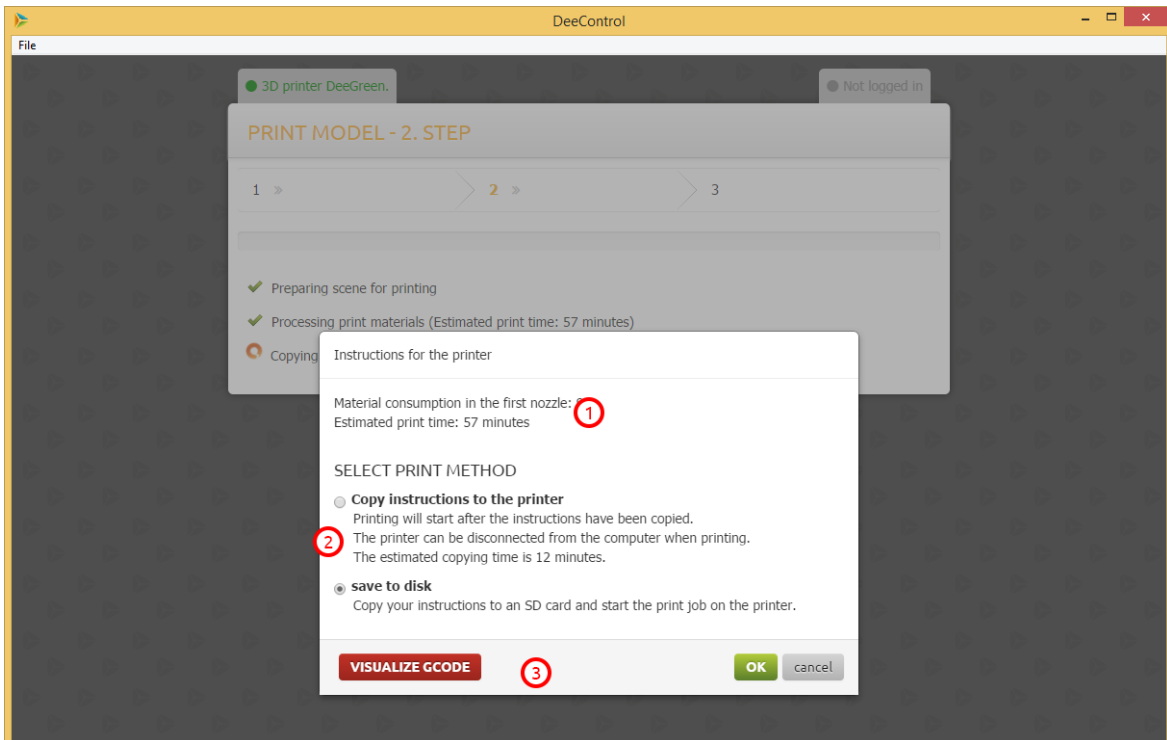
12. Slicing



This screen does not require any activity.

DeeControl will now prepare the print job according to the parameters defined in previous steps. The process may take several minutes depending on the complexity of the model, and on print settings.

13. Model ready to print

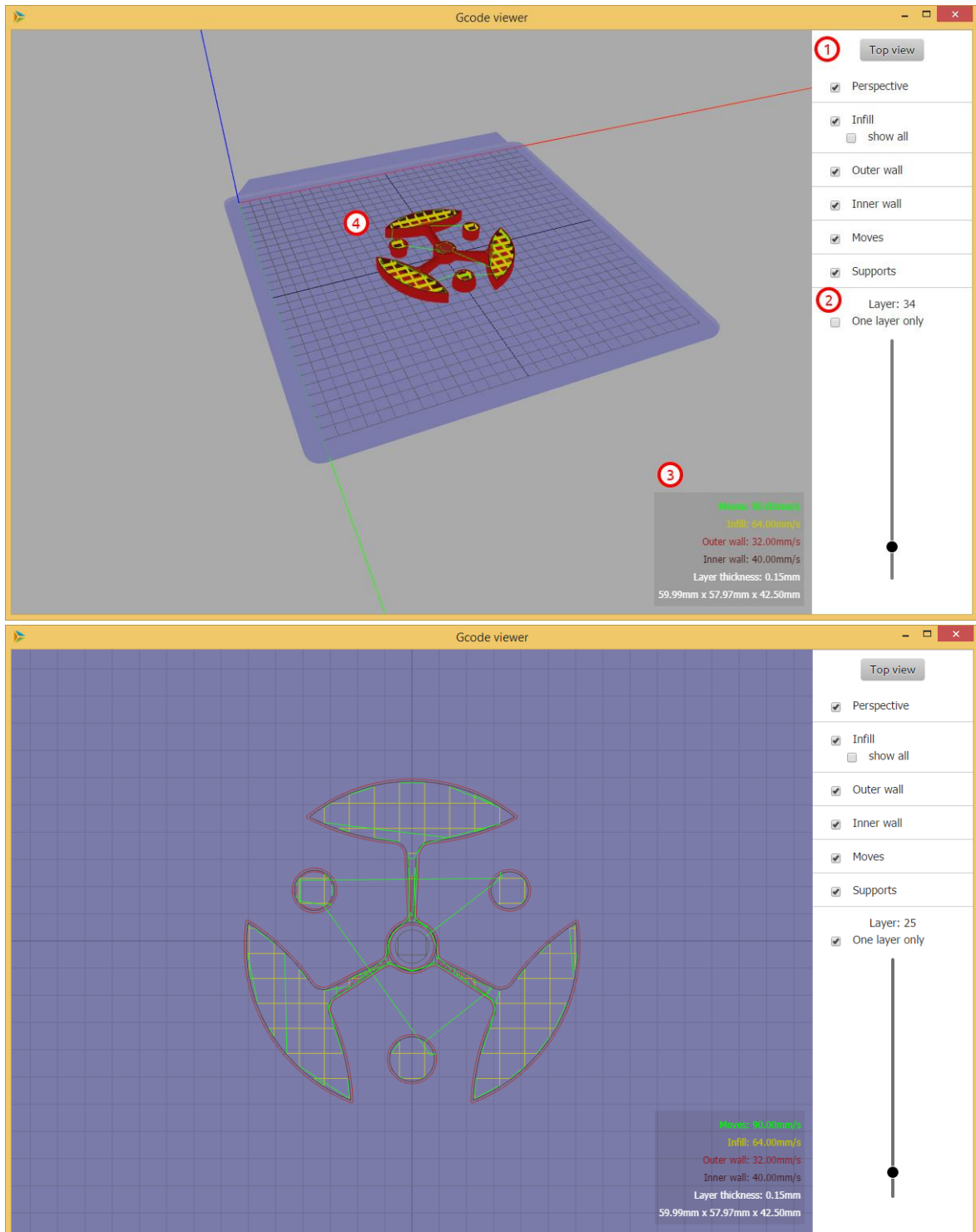


Print data preparation has now been completed. The screen will display estimated print time and material consumption. You will now be able to check how the actual print will be executed and save the output to a GCode file to your hard drive, SD card, or send it directly to the printer.

The fastest, and recommended method to transfer the GCode to the printer is by using SD card instead of USB connection.

1. **Print details** – displays estimated print time and material consumption.
2. **Transfer data to the printer** – allows you to select transfer method in which the GCode file will be transferred to the printer. Transfer method can be chosen from SD card, or USB connection.
3. **GCode visualization** – opens the GCode viewer, which provides a detailed overview of how the printer will process the print task.

14. GCode Viewer



GCode Viewer is used to visualize the generated code that will instruct the printer how to print the model. It is a powerful tool that shows the way in which the print head moves between the individual layers, and presents a rough idea of what the finished product will look like.

GCode Viewer allows to filter specific types of instructions and to display specific print layers.

1. **Display filters** – show or hides specific types of instructions. Allows to switch to bird's perspective.
2. **Layers** – slider is used to browse the layers, either individually or by model section form.
3. **Print information** – contains information about the execution speed of each specific instruction, layer thickness of the model and real dimensions of the model.
4. **View GCode** – view part of the model using the features in GCode visualization program.

15. Main Screen Controls

- **Rotate camera** by left click on the Virtual Print Bed.
- **Move camera** by right click and dragging anywhere in the scene.
- **Move model** by left click the model and dragging anywhere in the scene.
- **Open context menu** by right click on the model, or outside of the model.
- **Delete selected model** by pressing the red button on vertical toolbar, or by hitting DELETE key on your keyboard.

16. Tips and tricks

Add files containing models to the Virtual Print Bed by “drag and drop” directly from a folder in your computer to the DeeControl window, or by double clicking an associated file type.

DeeControl allows models to overlap. The connections and joints in the model may not be firm enough once printed. For better results, it is always better to prepare the design in your CAD software.

If only a small surface area of the model touches the print bed, the model will most likely break off during the print task, and the result will probably not turn out as expected. Set the model on the print bed with a larger surface or add an initial structure in Print Settings to minimize the failure probability.

Linear supports are less stable in higher-placed locations. They can, however, be easily removed.

Too low infill may result in inadequate top layers closure. We recommend to increase the number of full layers towards the top of the model.

If a part of the model forms an angle with the print bed, the support-model distance on axes X and Y can alter the distance on axis Z.

The larger the support generation angle, the more the supports will be generated.

Some models can be printed without supports despite having overhangs. It is worth exploring the shapes and dimensions the printer can print without having to use the supports.

Think carefully about how to place the model on the print bed and set the parameters for optimized print performance. Preparation and further process of a poorly defined print job is very time-consuming.

GCode Viewer is a powerful tool that shows how the printer will work when printing. It can be used to display the number of supports in the model and their placement. Using thicker layers (lower quality) facilitates the print of overhangs without supports.

17. Contact details

Manufacturer:

be3D, s.r.o.

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VAT No.: CZ49356593

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